

I claim:

1. An optical storage medium, comprising:  
a first layer having a pattern of features in at least one major surface; and  
a first semi-reflective coating adjacent the first layer, the first semi-reflective coating including a first metal alloy, said first metal alloy including silver and zinc, and wherein the relationship between the amounts of silver and zinc is defined by  $Ag_x Zn_y$  where  $0.85 < x < 0.9999$  and  $0.0001 < y < 0.15$ .
2. The medium of claim 1, and wherein  $0.001 < y < 0.10$ .
3. The medium of claim 1, wherein said first coating directly contacts said first metal alloy.
4. The medium of claim 1, further including:  
a second layer having a pattern of features in at least one major surface; and  
a second coating adjacent the second layer.
5. The medium of claim 1 further including:  
a second layer, said second layer including a dielectric

material;  
a third layer having a pattern of features in at least one major surface, said third layer including an optically re-recordable material; and  
a fourth layer, said fourth layer including a dielectric material.

6. The medium of claim 5, wherein the optically re-recordable material is a phase-changeable material.

7. The medium of claim 6, wherein the optically re-recordable material further comprises a phase changeable material selected from the group consisting of Ge-Sb-Te, Ag-In-Sb-Te, Cr-Ge-Sb-Te, As-Te-Ge, Te-Ge-Sn, Te-Ge-Sn-O, Te-Se, Sn-Te-Se, Te-Ge-Sn-Au, Ge-Sb-Te, Sb-Te-Se, In-Se-Tl, In-Sb, In-Sb-Se, In-Se-Tl-Co, and Si-Te-Sn.

8. The medium of claim 5, wherein the optically re-recordable material is a magneto-optic material.

9. The medium of claim 8, wherein the optically re-recordable material further comprises a magneto-optic material selected from the group consisting of Tb-Fe-Co and Gd-Tb-Fe.

10. The medium of claim 1, wherein the first metal alloy includes cadmium present from about 0.01 a/o percent to about 20.0 a/o percent of the amount of silver present.

11. The medium of claim 1, wherein the first metal alloy includes lithium present from about 0.01 a/o percent to about 10.0 a/o percent of the amount of silver present.

12. The medium of claim 1, wherein the first metal alloy includes manganese present from about 0.01 a/o percent to about 7.5 a/o percent of the amount of silver present.

13. The medium of claim 1, wherein the first metal alloy includes a metal selected from the group consisting of gold, rhodium, copper, ruthenium, osmium, iridium, platinum and palladium and mixtures thereof, and wherein the metal is present from about 0.01 a/o percent to about 5.0 a/o percent of the amount of silver present.

14. The medium of claim 1, and wherein the first metal alloy includes a metal selected from the group consisting of titanium, nickel, indium, chromium, germanium, tin, antimony, gallium, silicon, boron, zirconium, molybdenum and mixtures thereof, and wherein the metal is present from

about 0.01 a/o percent to about 5.0 a/o percent of the amount of silver present.

15. An optical storage medium, comprising:  
a first layer having a pattern of features in at least one major surface; and  
a first semi-reflective coating adjacent the first layer, the first semi-reflective coating including a first metal alloy, said first metal alloy including silver and aluminum, and wherein the relationship between the amounts of silver and aluminum is defined by  $Ag_x Al_z$ , where  $0.95 < x < 0.9999$  and  $0.0001 < z < 0.05$ .

16. The medium of claim 15, wherein  $0.001 < z < 0.03$ .

17. The medium of claim 15, wherein said first coating directly contacts said first metal alloy.

18. The medium of claim 15, further including:  
a second layer having a pattern of features in at least one major surface; and  
a second coating adjacent the second layer.

19. The medium of claim 15 further comprising:  
a second layer, said second layer including a dielectric

material;  
a third layer having a pattern of features in at least one major surface, said third layer including an optically re-recordable material; and  
a fourth layer, said fourth layer including a dielectric material.

20. The medium of claim 19, wherein the optically re-recordable material is a phase-changeable material.

21. The medium of claim 20, wherein the optically re-recordable material further comprises a phase changeable material selected from the group consisting of Ge-Sb-Te, Ag-In-Sb-Te, Cr-Ge-Sb-Te, As-Te-Ge, Te-Ge-Sn, Te-Ge-Sn-O, Te-Se, Sn-Te-Se, Te-Ge-Sn-Au, Ge-Sb-Te, Sb-Te-Se, In-Se-Tl, In-Sb, In-Sb-Se, In-Se-Tl-Co, and Si-Te-Sn.

22. The medium of claim 19, wherein the optically re-recordable material is a magneto-optic material.

23. The medium of claim 22, wherein the optically re-recordable material further comprises a magneto-optic material selected from the group consisting of Tb-Fe-Co and Gd-Tb-Fe.

24. The medium of claim 15, wherein the first metal alloy includes manganese present from about 0.01 a/o percent to about 7.5 a/o percent of the amount of silver present.

25. The medium of claim 15, wherein the first metal alloy includes cadmium present from about 0.01 a/o percent to about 20.0 a/o percent of the amount of silver present.

26. The medium of claim 15, wherein the first metal alloy includes a metal selected from the group consisting of lithium, zinc and mixtures thereof, and wherein the metal is present from about 0.1 a/o percent to about 15.0 a/o percent of the amount of silver present.

27. The medium of claim 15, wherein the first metal alloy includes a metal selected from the group consisting of gold, rhodium, copper, ruthenium, osmium, iridium, platinum, palladium and mixtures thereof, and wherein the metal is present from about 0.01 a/o percent to about 5.0 a/o percent of the amount of silver present.

28. The medium of claim 15, and wherein the first metal alloy includes a metal selected from the group consisting of titanium, nickel, indium, chromium, germanium, tin, antimony, gallium, silicon, boron, zirconium and

molybdenum and mixtures thereof, and wherein the metal is present from about 0.01 a/o percent to about 5.0 a/o percent of the amount of silver present.

29. An optical storage medium, comprising:  
a first layer having a pattern of features in at least one major surface; and  
a first semi-reflective coating adjacent the first layer, the first semi-reflective coating including a first metal alloy, said first metal alloy including silver, zinc and aluminum; and wherein the relationship between the amounts of silver, zinc and aluminum is defined by  $Ag_xZn_yAl_z$ , where  $0.80 < x < 0.998$ ,  $0.001 < y < 0.15$ , and  $0.001 < z < 0.05$ .

30. The medium of claim 29, and wherein  $0.001 < y < 0.05$  and  $0.001 < z < 0.03$ .

31. The medium of claim 29, wherein said first coating directly contacts said first metal alloy.

32. The medium of claim 29, further including:  
a second layer having a pattern of features in at least one major surface; and  
a second coating adjacent the second layer.

33. The medium of claim 29 further including:  
a second layer, said second layer including a dielectric material;  
a third layer having a pattern of features in at least one major surface, said third layer including an optically re-recordable material;  
a fourth layer, said fourth layer including a dielectric material.

34. The medium of claim 33, wherein the optically re-recordable material is a phase-changeable material.

35. The medium of claim 34, wherein the optically re-recordable material further comprises a phase changeable material selected from the group consisting of Ge-Sb-Te, Ag-In-Sb-Te, Cr-Ge-Sb-Te, As-Te-Ge, Te-Ge-Sn, Te-Ge-Sn-O, Te-Se, Sn-Te-Se, Te-Ge-Sn-Au, Ge-Sb-Te, Sb-Te-Se, In-Se-Tl, In-Sb, In-Sb-Se, In-Se-Tl-Co, and Si-Te-Sn.

36. The medium of claim 33, wherein the optically re-recordable material is a magneto-optic material.

37. The medium of claim 36, wherein the optically re-recordable material further comprises a magneto-optic



material selected from the group consisting of Tb-Fe-Co and Gd-Tb-Fe.

38. The medium of claim 29, wherein the first metal alloy includes manganese present from about 0.01 a/o percent to about 7.5 a/o percent of the amount of silver present.

39. The medium of claim 38, wherein the manganese is present from about 0.01 a/o percent to about 5.0 a/o percent of the amount of silver present.

40. The medium of claim 29, wherein the first metal alloy includes nickel present from about 0.01 a/o percent to about 5.0 a/o percent of the amount of silver present.

41. The medium of claim 40, wherein the nickel is present from about 0.01 a/o percent to about 3.0 a/o percent of the amount of silver present.

42. The medium of claim 29, and wherein the first metal alloy includes a metal selected from the group consisting of ruthenium, copper, rhodium, osmium, iridium, gold, palladium and platinum and mixtures thereof, and wherein the metal is present from about 0.1 a/o percent to

about 5.0 a/o percent of the amount of silver present.

43. An optical storage medium, comprising:  
a first layer having a pattern of features in at least one major surface; and  
a first semi-reflective coating adjacent the first layer, the first semi-reflective coating including a first metal alloy, said first metal alloy including silver and manganese, and wherein the relationship between the amounts of silver and manganese is defined by  $Ag_xMn_t$  where  $0.925 < x < 0.9999$  and  $0.0001 < t < 0.075$ .

44. The medium of claim 43, and wherein  $0.001 < t < 0.05$ .

45. The medium of claim 43, wherein said first coating directly contacts said first metal alloy.

46. The medium of claim 43, further including:  
a second layer having a pattern of features in at least one major surface; and  
a second coating adjacent the second layer.

47. The medium of claim 43, further comprising:  
a second layer, said second layer including a dielectric

material;  
a third layer having a pattern of features in at least one major surface, said third layer including an optically re-recordable material; and  
a fourth layer, said fourth layer including a dielectric material.

48. The medium of claim 47, wherein the optically re-recordable material is a phase-changeable material.

49. The medium of claim 48, wherein the optically re-recordable material further comprises a phase changeable material selected from the group consisting of Ge-Sb-Te, Ag-In-Sb-Te, Cr-Ge-Sb-Te, As-Te-Ge, Te-Ge-Sn, Te-Ge-Sn-O, Te-Se, Sn-Te-Se, Te-Ge-Sn-Au, Ge-Sb-Te, Sb-Te-Se, In-Se-Tl, In-Sb, In-Sb-Se, In-Se-Tl-Co, and Si-Te-Sn.

50. The medium of claim 47, wherein the optically re-recordable material is a magneto-optic material.

51. The medium of claim 50, wherein the optically re-recordable material further comprises a magneto-optic material selected from the group consisting of Tb-Fe-Co and Gd-Tb-Fe.

52. The medium of claim 43, wherein the first metal alloy includes cadmium present from about 0.01 a/o percent to about 20.0 a/o percent of the amount of silver present.

53. The medium of claim 43, wherein the first metal alloy includes lithium present from about 0.01 a/o percent to about 10.0 a/o percent of the amount of silver present.

54. The medium of claim 43, wherein the first metal alloy includes manganese present from about 0.01 a/o percent to about 5.0 a/o percent of the amount of silver present.

55. The medium of claim 43, wherein the first metal alloy further comprises a metal selected from the group consisting of ruthenium, copper, rhodium, osmium, iridium, gold, palladium and platinum and mixtures thereof, and wherein the metal is present from about 0.01 a/o percent to about 5.0 a/o percent of the amount of silver present.

56. The medium of claim 43, wherein the first metal alloy further comprises a metal selected from the group consisting of titanium, indium, chromium, germanium, tin, antimony, gallium, silicon, zirconium, boron, and molybdenum and mixtures thereof, and wherein the metal is present from about 0.1 a/o percent to about 5.0 a/o percent of the amount

of silver present.

57. An optical storage medium, comprising:  
a first layer having a pattern of features in at least one major surface; and  
a first semi-reflective coating adjacent the first layer, the first semi-reflective coating including a first metal alloy, said first metal alloy including silver and germanium, and wherein the relationship between the amounts of silver and germanium is defined by  $\text{Ag}_x\text{Ge}_q$  where  $0.97 < x < 0.9999$  and  $0.0001 < q < 0.03$ .

58. The medium of claim 57, and wherein  $0.001 < q < 0.015$ .

59. The medium of claim 57, wherein said first coating directly contacts said first metal alloy.

60. The medium of claim 57, further including:  
a second layer having a pattern of features in at least one major surface; and  
a second coating adjacent the second layer.

61. The medium of claim 57 further comprising:  
a second layer, said second layer including a

dielectric material;  
a third layer having a pattern of features in at least one major surface, said third layer including an optically re-recordable material; and  
a fourth layer, said fourth layer including a dielectric material.

62. The medium of claim 61, wherein the optically re-recordable material is a phase-changeable material.

63. The medium of claim 62, wherein the optically re-recordable material further comprises a phase changeable material selected from the group consisting of Ge-Sb-Te, Ag-In-Sb-Te, Cr-Ge-Sb-Te, As-Te-Ge, Te-Ge-Sn, Te-Ge-Sn-O, Te-Se, Sn-Te-Se, Te-Ge-Sn-Au, Ge-Sb-Te, Sb-Te-Se, In-Se-Tl, In-Sb, In-Sb-Se, In-Se-Tl-Co, and Si-Te-Sn.

64. The medium of claim 61, wherein the optically re-recordable material is a magneto-optic material.

65. The medium of claim 64, wherein the optically re-recordable material further comprises a magneto-optic material selected from the group consisting of Tb-Fe-Co and Gd-Tb-Fe.

66. The medium of claim 57, wherein the first metal alloy further includes manganese present from about 0.01 a/o percent to about 7.5 a/o percent of the amount of silver present.

67. The medium of claim 57, wherein the first metal alloy further includes aluminum present from about 0.01 a/o percent to about 5.0 a/o percent of the amount of silver present.

68. The medium of claim 57, wherein the first metal alloy further comprises a metal selected from the group consisting of ruthenium, copper, rhodium, osmium, iridium, gold, palladium and platinum and mixtures thereof, and wherein the metal is present from about 0.1 a/o percent to about 5.0 a/o percent of the amount of silver present.

69. The medium of claim 57, wherein the first metal alloy further comprises a metal selected from the group consisting of zinc, cadmium, lithium, nickel, titanium, zirconium, indium, chromium, tin, antimony, gallium, silicon, boron, and molybdenum and mixtures thereof, and wherein the metal is present from about 0.01 a/o percent to about 5.0 a/o percent of the amount of silver present

70. An optical storage medium, comprising:  
a first layer having a pattern of features in at least one major surface; and  
a first coating adjacent the first layer, the first coating including a first metal alloy, said first metal alloy includes silver, copper, and manganese, and wherein the relationship between the amounts of silver, copper and manganese is defined by  $Ag_x Cu_p Mn_t$  where  $0.825 < x < 0.9998$ ,  $0.0001 < p < 0.10$ , and  $0.0001 < t < 0.075$ .

71. The medium of claim 70, and wherein  $0.001 < p < 0.05$  and  $0.001 < t < 0.03$ .

72. The medium of claim 70, wherein said first coating directly contacts said first metal alloy.

73. The medium of claim 70, further including:  
a second layer having a pattern of features in at least one major surface; and  
a second coating adjacent the second layer.

74. The medium of claim 70 further comprising:  
a second layer, said second layer including a dielectric



material;  
a third layer having a pattern of features in at least one major surface, said third layer including an optically re-recordable material;  
a fourth layer, said fourth layer including a dielectric material.

75. The medium of claim 74, wherein the optically re-recordable material is a phase-changeable material.

76. The medium of claim 75, wherein the optically re-recordable material further comprises a phase changeable material selected from the group consisting of Ge-Sb-Te, Ag-In-Sb-Te, Cr-Ge-Sb-Te, As-Te-Ge, Te-Ge-Sn, Te-Ge-Sn-O, Te-Se, Sn-Te-Se, Te-Ge-Sn-Au, Ge-Sb-Te, Sb-Te-Se, In-Se-Tl, In-Sb, In-Sb-Se, In-Se-Tl-Co, and Si-Te-Sn.

77. The medium of claim 74, wherein the optically re-recordable material is a magneto-optic material.

78. The medium of claim 77, wherein the optically re-recordable material further comprises a magneto-optic material selected from the group consisting of Tb-Fe-Co and Gd-Tb-Fe.

79. The medium of claim 70, wherein the first metal alloy further comprises a metal selected from the group consisting of aluminum, titanium, zirconium, nickel, indium, chromium, germanium, tin, antimony, gallium, silicon, boron, molybdenum, and mixtures thereof, and wherein the metal is present from about 0.01 a/o percent to about 5.0 a/o percent of the amount of silver present.